AMENDMENTS TO THE CLAIMS

The following Listing of Claims will replace all prior versions and listings of claims in this application.

LISTING OF CLAIMS

1. (Currently amended) A device for generating a three-dimensional model of a spatial structure comprising:

an imaging unit for generating two-dimensional projection images of the spatial structure from various directions;

a display unit that is coupled to the imaging unit for displaying one of the projection images as a reference image, in which connection the display unit comprises input means in order to make possible the interactive specification of at least one image point in a segment of the spatial structure as a reference point;

a data processing device that is coupled to the imaging unit and the display unit and is designed to reconstruct a space point corresponding to the reference point of the structure from further projection images produced from other directions using the image-processing unit, wherein the space point is reconstructed by evaluating other image points of the further projection images that lie on a respective epipolar line of the reference point, wherein gray scale values corresponding to the other image points are projected on a projection line of the reference point and added to form a sum profile having constructive superimposition of the gray values of multiple epipolar lines and averaging out the contributions of other vascular segments, thereby determining a space point of a vascular segment and wherein said space point is defined as that position on the projection line of the reference point at which the sum profile assumes an extreme.

2. (Previously presented) A device as claimed in clam 1, wherein the imaging unit is a rotation X-ray unit.

3. (Previously presented) A device as claimed in claim 1, wherein the data-processing device is designed to reconstruct said space point utilizing further projection images that are obtained during different cardiac phases.

4. (Previously presented) A device as claimed in claim 3, wherein the gray scale values are added punctiformly to form the sum profile.

5. (Previously presented) A device as claimed in claim 1, wherein the sum profile is only evaluated in a segment in which the gray scale values of all the further projection images have contributed to the sum profile.

6. (Cancelled).

7. (Previously presented) A device as claimed in claim 1, wherein the spatial structure has a linear route and the data-processing device is designed to reconstruct said linear route from a specification of a plurality of reference points situated on the reference image.

8. (Previously presented) A device as claimed in claim 1, wherein the data-processing device is designed to determine a width of the spatial structure from a projection of a reconstructed three-dimensional model on projection images of the spatial structure.

9. (Previously presented) A device as claimed in claim 1, further comprising:

a cyclic movement detector for determining spontaneous movement associated with the spatial structure, wherein the data-processing device is designed to use only those further projection images for the reconstruction of the space point that originate from the same phase of the spontaneous movement as the reference image.

10. (Currently amended) A method for displaying ~~generating~~ a three-dimensional model of a vascular spatial structure with an imaging unit comprising the following steps:

a) operating an imaging unit to generate ~~generating~~ two-dimensional projection images of the structure taken from different directions, the images comprising a single reference image and further projection images;

b) displaying the reference image;

c) using a pointer appliance to mark ~~obtaining a selection of~~ at least one image point on the single reference image in a segment of the spatial structure as a reference point;

d) operating a computer of the imaging unit to automatically find a space point corresponding to the reference point by performing the steps:

projecting gray scale values corresponding to image points on epipolar lines in the further projection images which correspond to the reference point on a projection line of the reference point;

summing the gray scale values to form a sum profile having constructive superimposition of the gray values of multiple epipolar lines and averaging out the contributions of other vascular segments, thereby determining a space point of a vascular segment defined as that position on the projection line of the reference point at which the sum profile assumes an extreme; and

e) repeating step d) for each image point marked on the reference image of the spatial structure in step c), thereby generating a three-dimensional model of a spatial structure;

f) displaying the three-dimensional model.

~~determining a space point corresponding to the reference point of the spatial structure from the further projection images, wherein the space point is determined based on image intensity of other image points of the further projection images that lie on a respective epipolar line of the reference point, wherein gray scale values corresponding to the other image points are projected on a projection line of the reference point and added to form a sum profile for determining the space point and wherein the space point is defined as that position on the projection line of the reference point at which the sum profile assumes an extreme; and~~

~~generating a three-dimensional model of the spatial structure using the space point~~.

11. (Cancelled).

12. (Currently amended) The method of claim 10, wherein the imaging unit is ~~further comprising obtaining the two-dimensional projection images using~~ a rotation X-ray unit.

13. (Currently amended) The method of claim 10, wherein the ~~space point is reconstructed utilizing~~ further projection images [[that]] are obtained during different cardiac phases.

14. (Cancelled)

15. (Previously presented) The method of claim 10, wherein the sum profile is only evaluated in a segment in which the gray scale values of all the further projection images have contributed to the sum profile.

16. (Cancelled).

17. (Currently amended) The method of claim 10, wherein the spatial structure has a linear route and ~~is reconstructed from a specification of~~ a plurality of reference points ~~situated~~ on the reference image are marked.

18. (Currently amended) The method of claim 10, further comprising determining a width of the spatial structure from a projection of ~~a reconstructed~~ the three-dimensional model on projection images of the spatial structure.

19. (Currently amended) The method of claim 10, further comprising:

determining spontaneous movement associated with the spatial structure using an electrocardiograph apparatus, and wherein only those further projection images are utilized ~~for the reconstruction of the space point that originate~~ from the same phase of the spontaneous movement as the reference image.

20. (Cancelled)